CLAIMS

1. A three-dimensional image capturing device, comprising:

a first light source that radiates a light beam ;

an image device that accumulates signal charge corresponding to a quantity of light received on said image device;

a distance information sensing processor that radiates a distance measuring light beam from said first light source to a measurement subject and detects distance information which relates to said measurement subject by receiving a reflected light beam from said measurement subject due to said distance measuring light beam on said image device; and

a data transmitting processor that controls radiation at a second light source and radiates transmitting light beams, so that data is transmitted to an external device through space.

2. A device according to claim 1, wherein said second light source is identical to said first light source.

3. A device according to claim 1, wherein pulse frequency-modulation bands of said distance measuring light beam and said transmitting light beam are different from each other.

4. A device according to claim 1, wherein said data

comprises said distance information.

5. A device according to claim 1, comprising an image sensing processor that detects image information of said measurement subject by forming an image of said measurement subject on said image device.

6. A device according to claim 5, wherein said data comprises said image information.

7. A device according to claim 1, comprising a switching processor that switches on and off the drive of said data transmitting processor.

8. A device according to claim 2, wherein a series of said distance measuring light beams and a series of said transmitting light beams are superposed.

9. A device according to claim 8, wherein said distance information sensing processor radiates said distance measuring light beams from said first light source a predetermined number of times, so that signal charge is accumulated in said image device due to each reiterated radiation.

10. A device according to claim 9, wherein timing for radiating said transmitting light beams is based upon the timing of said reiterated radiation of said distance measuring light beams.

11. A device according to claim 10, wherein said series of said distance measuring light beams and said series of

said transmitting light beams are superposed, so that said transmitting light beams are radiated in the intervals between said distance measuring light beams.

12. A device according to claim 11, wherein said transmitting light beams comprise a pulse beam representing binary data in predetermined digits.

13. A device according to claim 10, wherein said distance measuring light beams and said transmitting light beams are superposed by pulse-width modulation of said light beams, so that said light beams comprise two types of pulse beams having different widths, which represent binary data of said data and are used for detecting said distance information, concurrently.

14. A device according to claim 9, wherein said distance measuring light beam is radiated before an accumulation of signal charge in said image device starts, and signal charge corresponding to said distance information of said measurement subject is accumulated during a period from a beginning of said accumulation to an end of said reflected light beam reception at said image device.

15. A device according to claim 14, wherein said transmitting light beam is radiated prior to said distance measuring light beam.

16. A device according to claim 15, wherein said transmitting light beam is radiated during a period, from

an end of said accumulation of said signal charge in said image device to a beginning of said distance measuring light beam radiation.

17. A device according to claim 8, wherein said distance measuring light beams comprise a synchronizing signal of an optical transmission system.

18. A device according to claim 2, wherein an accumulation of said signal charge in said image device is synchronously carried out with said transmitting light beam, so that said transmitting light beam can be used as said distance measuring light beam as well, and by this, said transmitting light beams and said distance measuring light beams are superposed with each other.

19. A device according to claim 18, wherein said distance information sensing processor radiates said distance measuring light beams from said first light source a predetermined number of times, so that signal charge is accumulated at said image device due to each reiterated radiation.

20. A device according to claim 18, wherein a series of said transmitting light beams represents binary data.

21. A device according to claim 18, wherein said transmitting light beams comprise pulse modulated laser beams.

22. A device according to claim 21, wherein a data sequence

transmitted by said transmitting light beams comprises a partition signal that delimits said data sequence by predetermined binary digits of the data.

23. A device according to claim 18, wherein said image device comprises a plurality of photoelectric conversion elements that accumulates signal charge corresponding to a quantity of light received, and signal charge holding units disposed adjacent to each of said photoelectric conversion elements.

24. A device according to claim 23, wherein the accumulation of said signal charge in said image device begins with a fall of an electric charge discharging signal that discharges the charge accumulated in said photoelectric conversion elements, and ends with a fall of an electric charge transfer signal that transfers said signal charge accumulated in said photoelectric conversion elements to said signal charge holding units.

25. A device according to claim 24, wherein said electric charge transfer signal rises approximately simultaneously with the fall of said electric charge discharging signal.

26. A device according to claim 25, wherein said electric charge transfer signal is generated by conjunction of a standard electric charge transfer signal comprised of periodic pulse signals and a data synchronizing pulse signal generated synchronously with the fall of a pulse signal of

said data sequence;

said electric charge discharging signal is generated by conjunction of said data synchronizing pulse signal and a standard electric charge discharging signal a period of which is the same as said standard electric charge transfer signal and from which the phase is delayed by a half period; and

said data synchronizing pulse signal is synchronized with said standard electric charge discharging signal and the pulse width of said data synchronizing pulse signal is the same as one period of said standard electric charge transfer signal.

27. A device according to claim 18, wherein the accumulation of said signal charge starts when said transmitting light beam falls.

28. A device according to claim 19, wherein said distance information sensing processor and said data transmitting processor are actuated during a distance measuring period, in which said distance measuring light beams are repeatedly radiated said predetermined number of times, said distance measuring period comprising:

a data transmitting period, in which said distance measuring light beams and said transmitting light beams are superposed and radiated; and

a supplement light emitting period, in which distance

measuring light beams are radiated so as to supplement the number of said distance measuring light beams radiated in said data transmitting period, by the number deficient from said predetermined number of times.

29. A receiver for use in an optical transmission system, a transmitter of which comprises a three-dimensional image capturing device, comprising:

a first light source that radiates a light beam;

an image device that accumulates signal charge that corresponds to a quantity of light received on said image device;

a distance information sensing processor that radiates a distance measuring light beam from said first light source to a measurement subject and detects distance information which relates to said measurement subject by receiving a reflected light beam from said measurement subject due to said distance measuring light beam on said image device; and

a data transmitting processor that controls radiation at a second light source and radiates transmitting light beams, so that data is transmitted to said receiver of an external device through space,

wherein said external device starts a receiving operation of said data when said receiver receives said distance measuring light beam.

30. A receiver according to claim 29, wherein said second light source is identical to said first light source.